



Emerging Technologies for the Boomer Generation

BoomerTech Series

November 3, 2005

Applying Smart Technologies to Enhance the quality of life

SMARTSILVERS
ALLIANCE



Leveraging technology
to foster active aging

Technology Panelists

- Introduction: Cara Rice, Stanford Center for Longevity
- Opening Remarks: Dr. Larry Leifer, Stanford Center for Design Research
- Moderator: Susan Ayers Walker, SmartSilvers Alliance
- Dr. Alex Pentland – MIT Media Lab
- Dr. Terry Winograd – Stanford d. school
- Dana Mead – Kleiner Perkins Caulfield & Byers

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“ **Welcome to the dawn of the “silver tech age,”** when chipmakers, software developers, medical-device manufacturers, and network suppliers focus their smarts and growth plans on the aging population ...”

Business Week Sept 2005

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Boomers – 1946-1964 -- **77 Million** in the US
28% of population – **45.6 Million** households

Estimated Spending Power -- \$2.1 Trillion

Boomers & Technology:

- more Tech savvy than the last generation
- they use tech at work, home and in daily life
- they buy it for their Echo boomer kids.
- they want to appear hip and in-the-know

Boomers worry about :

- Looking Young -- not being perceived as old
- Staying Healthy and Fit
- Eating and living well
- Making daily life efficient so they have more time to play

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Enabling Technologies

- Wireless networks
- Robotics
- RFID – GPS - Location
- Artificial Intelligence
- Sensors
- Wearable devices
- Tele-presence
- Semiconductors
- Universal Design
- Environmental Technologies
- Systems Integration / services
- Embedded devices
- Handheld communication
- Medical/Mobility devices
- Automotive advances
- Nano Technology
- Cognitive Orthotics

Tech Buzz

- Smart
- Awareness
- Intuitive
- Assistive
- Pervasive
- Mobil
- Connected 24/7
- Digital Home
- Smart Home
- Always On
- Universal Design

Software

- Location-based
- Micro content
- Artificial Intelligence
- Tele-communication
- Internet & Web
- Security
- Identity protection
- Networking
- Transaction
- Autominders

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Emerging Trends

24/7 Access

Seamless Roaming

Smart Phones

Ultrawideband

Wearables



Speech
Recognition

Fuel Cells

Smart Objects

Ambient Technology



RFID

MEMS

Location
Sensing

Sensor
Networks

Object
Identification

Connectivity

Semantic Web

Affinity Profiles



Automatic Tagging
Information Extraction

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Source: Gartner Group 2005



The Smart New World

What should objects know?

Identity, location, owner, history, safety, environment ...

Smart objects drive smarter decisions:

- Safety compliance and notification
- Item tracking
- Proactive healthcare

Product + Connectivity = Service

- Risk-based insurance
- Traffic routing
- People tracking

Challenges:

- Security and privacy risks*
- Managing the data flood*



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The Digital Home - Healthy Home

- Digital home entertainment infrastructure could be used for active health and fitness monitoring
- Technology being developed for personalized, health info/reminders/agents



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More Applications that Boomers will Buy

- Smart Quick Connectivity – connecting with the kids, friends and family
- Smart Home – *Not just the big TV and my Tunes* -- Residential wireless sensors, security, maintenance issues, fire/theft plus taking care of Mom & Dad's home and/or the vacation home
- Smarter Mobile devices -- wireless with voice recognition, location based services, everyday micro commerce
- Smart Auto -- dashboard technology, aware driving & illumination
- Smart Aids– RFID & GPS - Finding lost items
- Consumer Assistive Technologies -- for easy travel, shopping, staying socially connected, financial management, lifelong learning personal health trainers or dealing with a chronic conditions.
- And lots more...



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SmartSilvers Alliance

- The goal of SmartSilvers is to "leverage technologies which foster active aging".
- A business-to-business alliance that provides a collaborative infrastructure across the continuum of research, manufacturing, investment, housing and services.
- Our mission is to promote awareness, and development of innovative, products and technology-leveraged services which cater to the unique needs of our expanding +50 population

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LifeWear

Alex Pentland, MIT



Opportunity

- Times 5 increase in health care costs during next decade unless we keep people out of hospital except at exactly right time
- Healthcare outcomes vary wildly depending on support afterwards: times 2 change in some cases
- Healthcare costs: 0.005 of patients cost 20% of total due to insufficient home support



© sam ogden

The Wearable Computer



24/7 sensing,
just-in-time
Information

HealthWear:

NOKIA

SAMSUNG

MOTOROLA

INTEL

SONY



FOSSIL
MICROSOFT

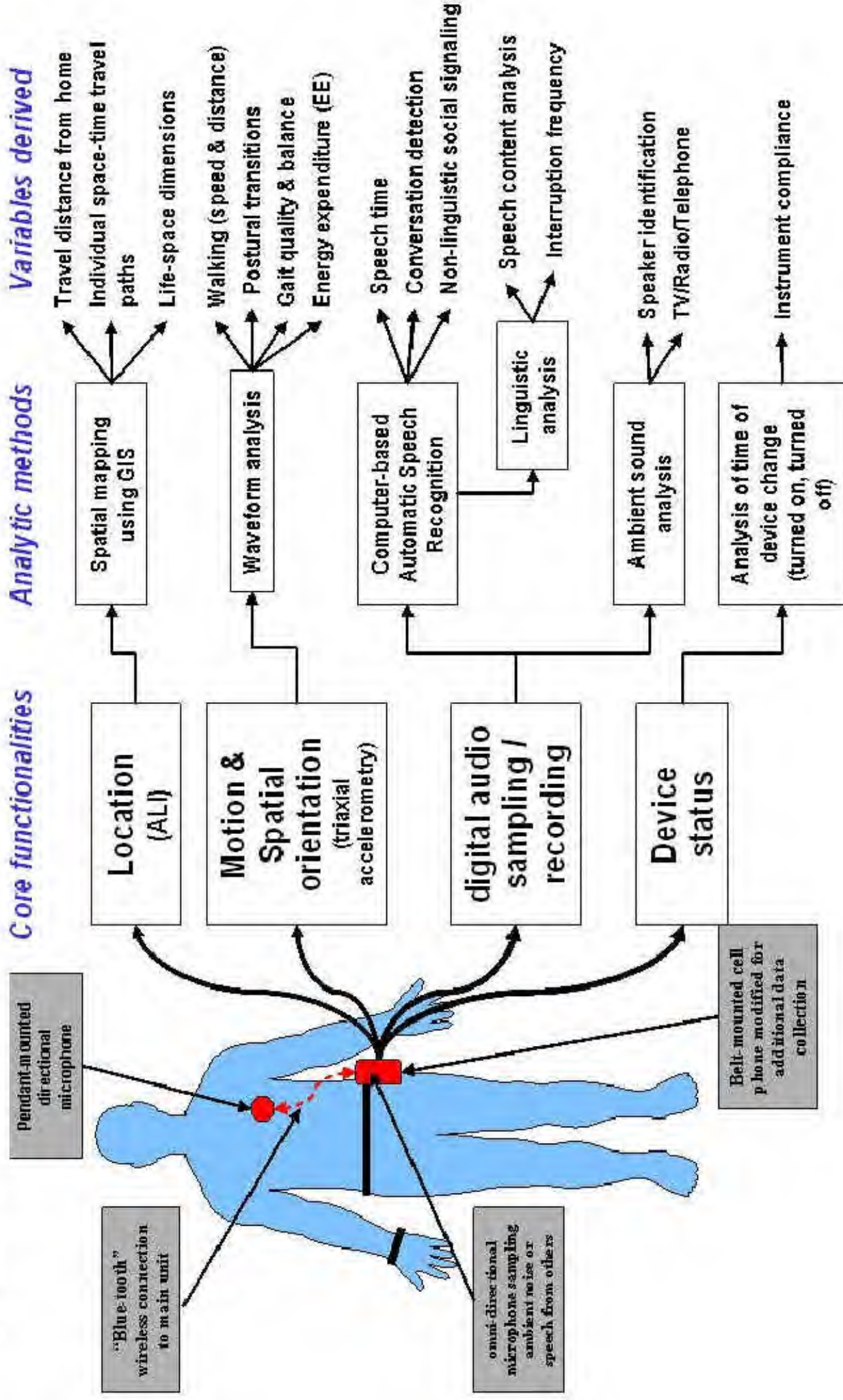


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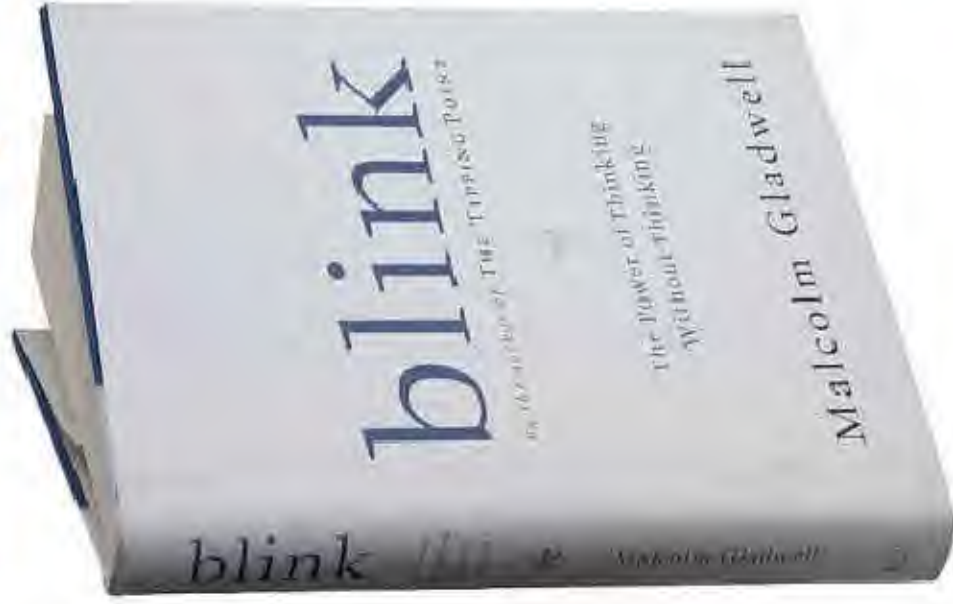


NOKIA

HealthWear



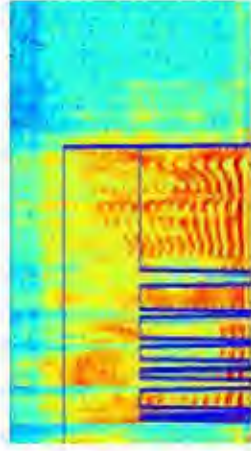
Social Signals: cues in tone of voice, body language



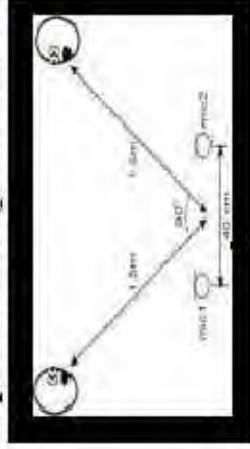
- Intention, importance, reflected in speaking style, body language
- People accurately and automatically perceive this information, *and can use it to accurately predict behavior*
- Even though they are unaware of it!

Audio Mining

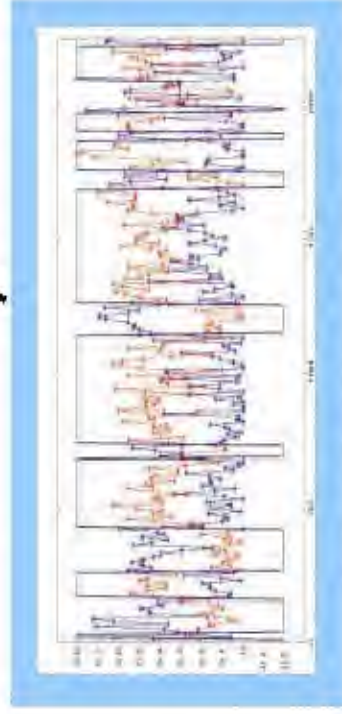
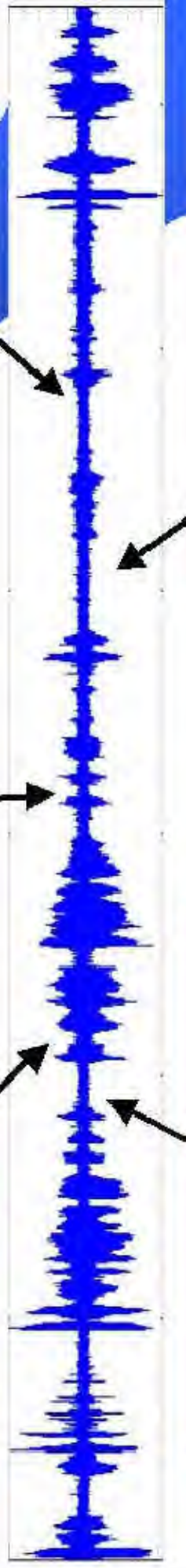
How are they speaking?



Who's speaking when?
Speaker Segmentation



Who's talking to who?
Finding Conversations



Who's holding the floor?
Finding, Predicting, and Describing
Conversational Scenes



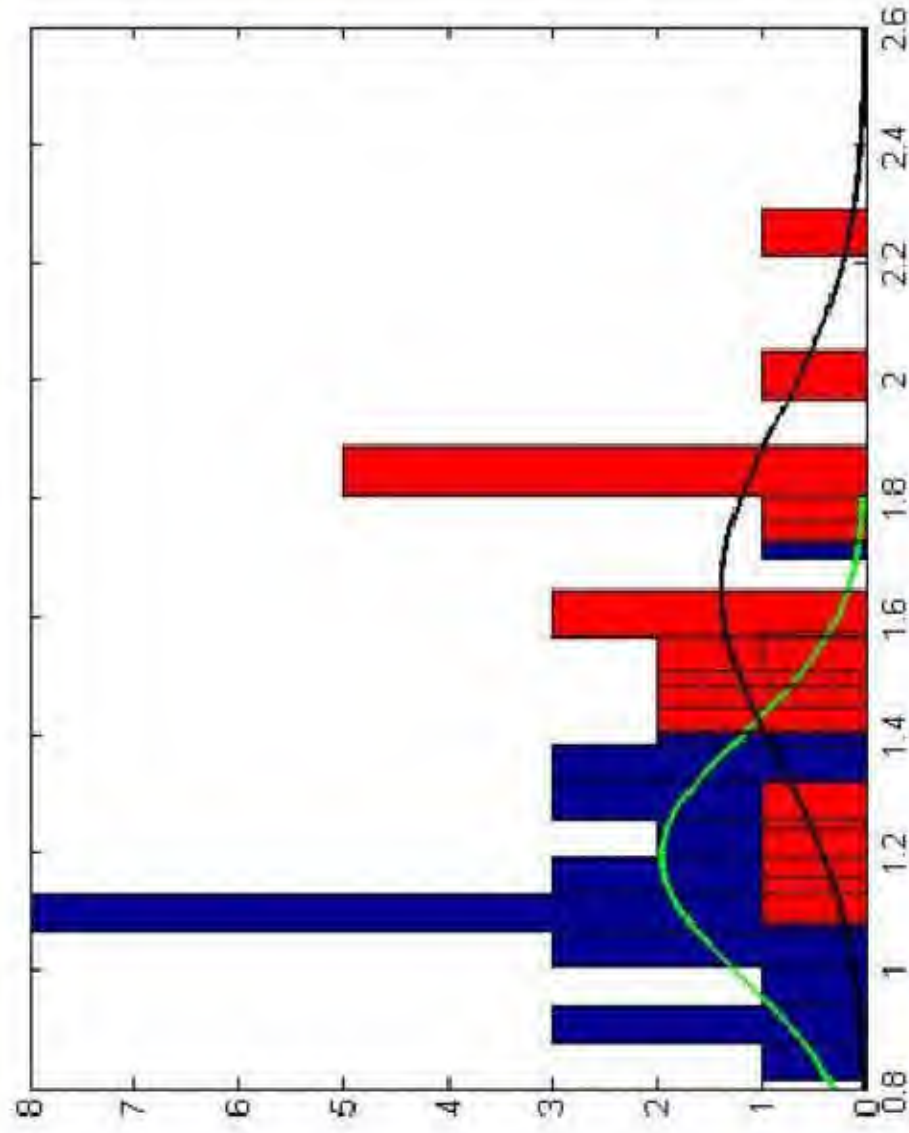
What sort of conversation is it?
Classifying Conversational Types

Listening to Social Signals



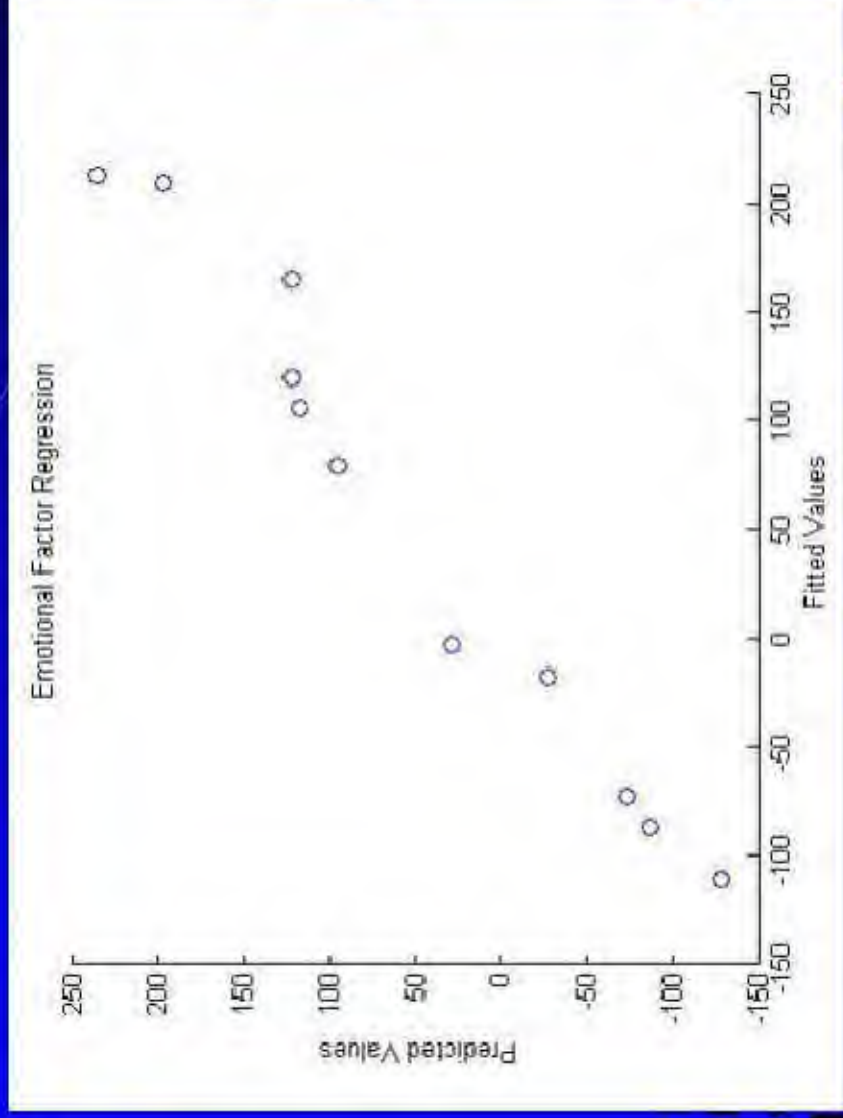
active vs passive
engagement
stress vs relaxed
mirroring

Will the woman say yes to going on a date?



Measuring Mood

Sung, Marco, Pedhazur



More sleep
Lack of energy
Low sociability
'Flat' conversation



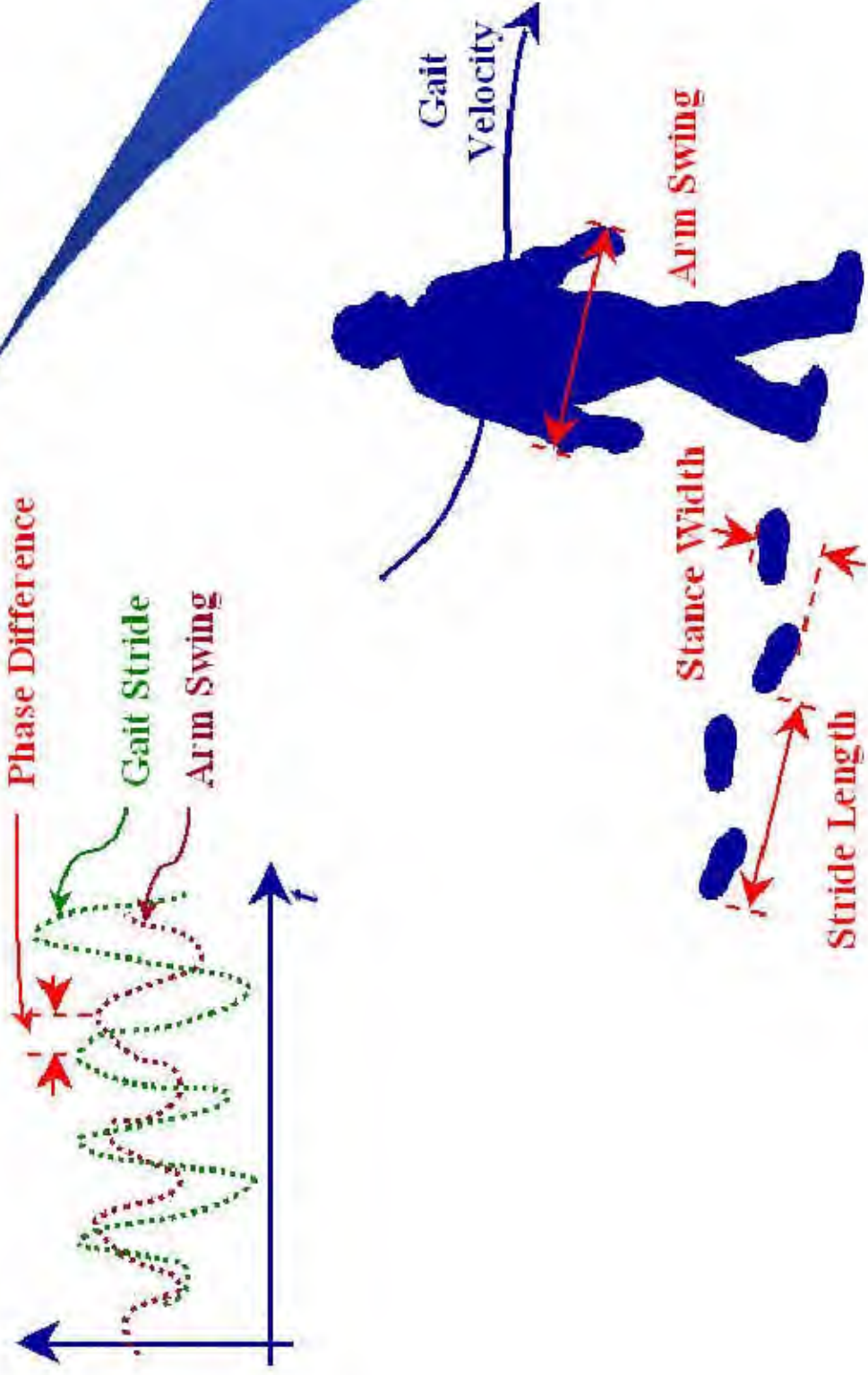
Depression

Mania

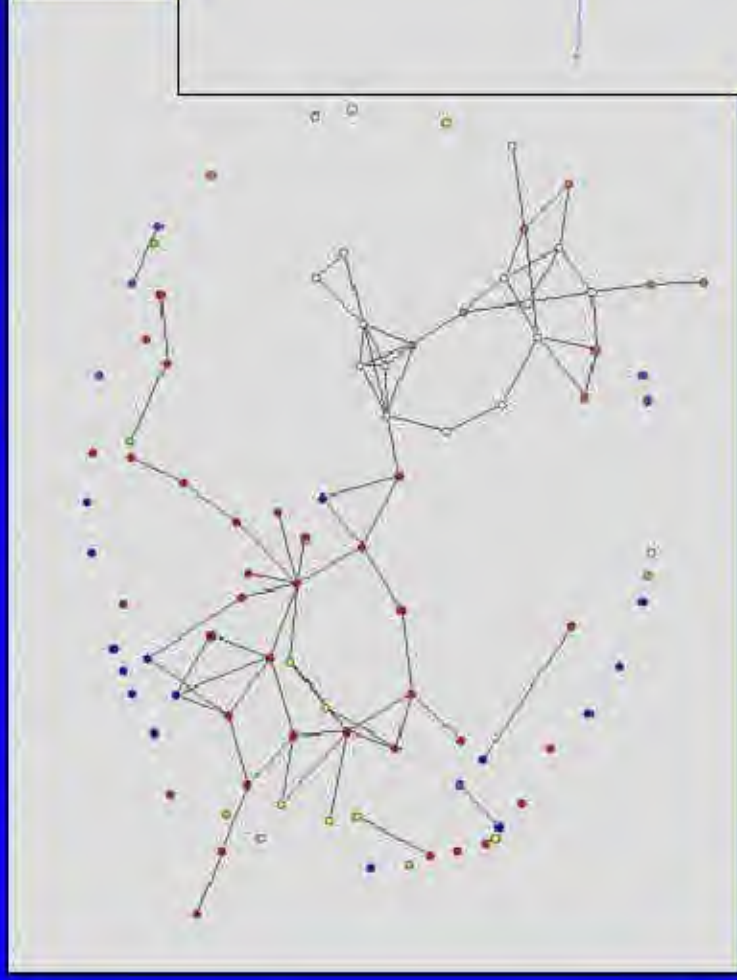


Less sleep
More energy
High sociability
Fast speech

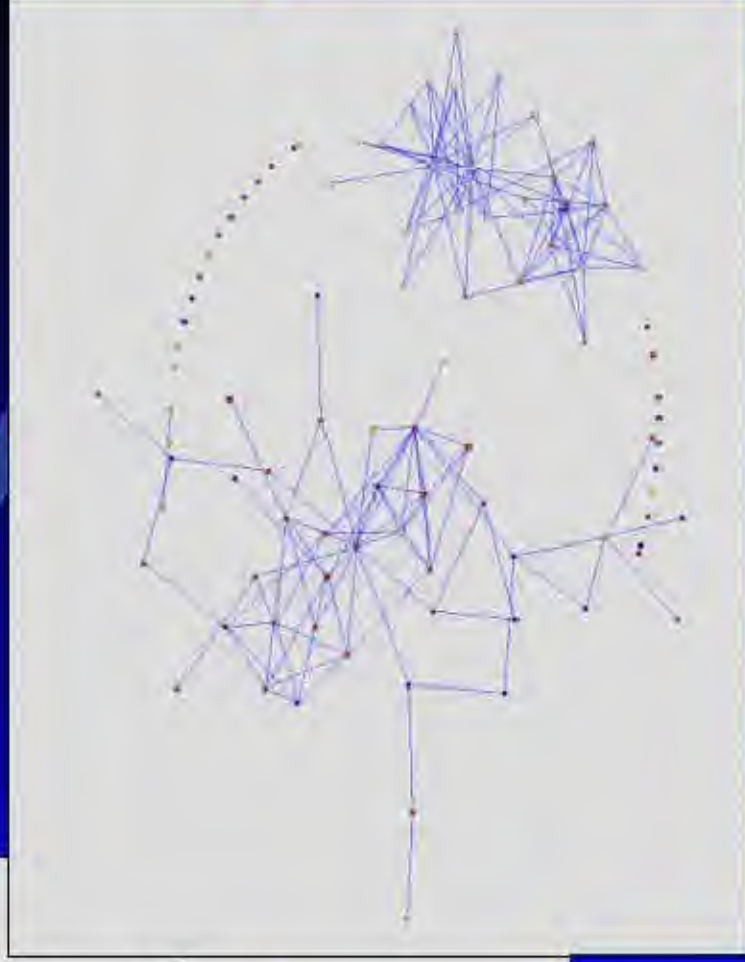
Example Application: Gait Analysis



Self-Report vs. Reality Mining



Self-Report Friendship



1-Day Proximity

Towards a Quality of Life Meter

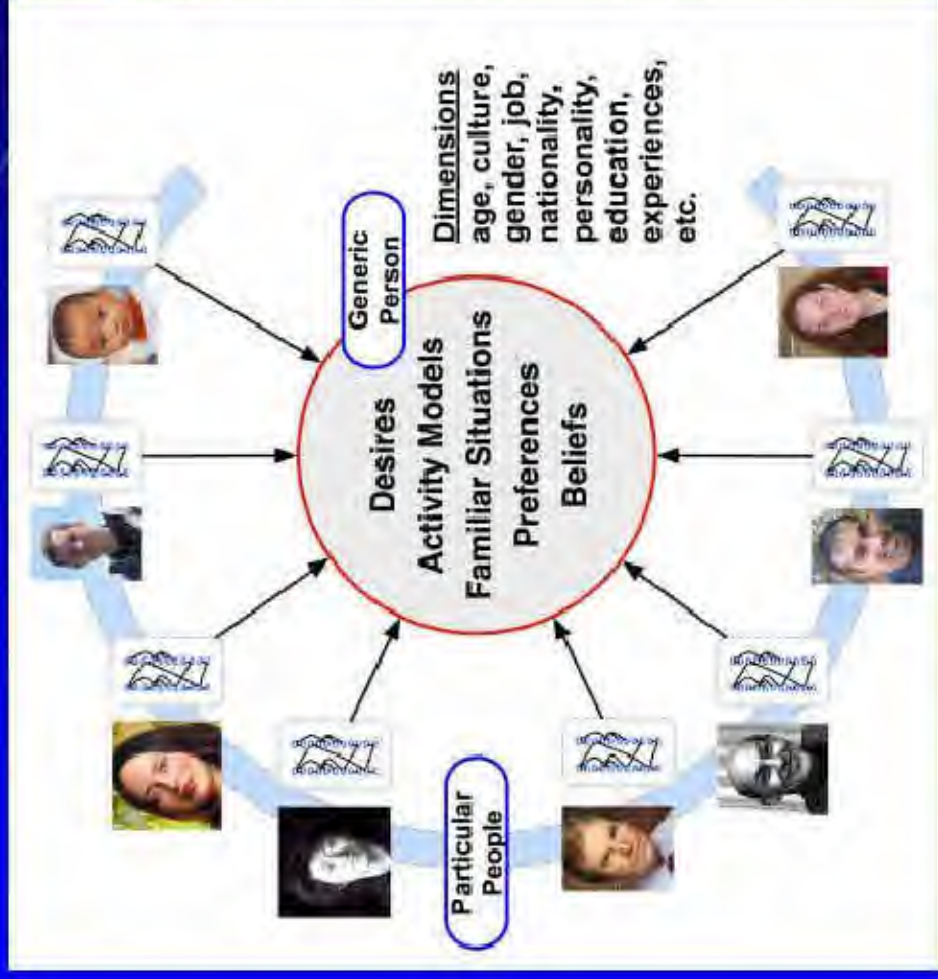
- DI $r = 0.86$
- HAM-D $r = 0.81$
- CGI $r = 0.94$
- QLS $r = 0.79$

The Cyborg Society

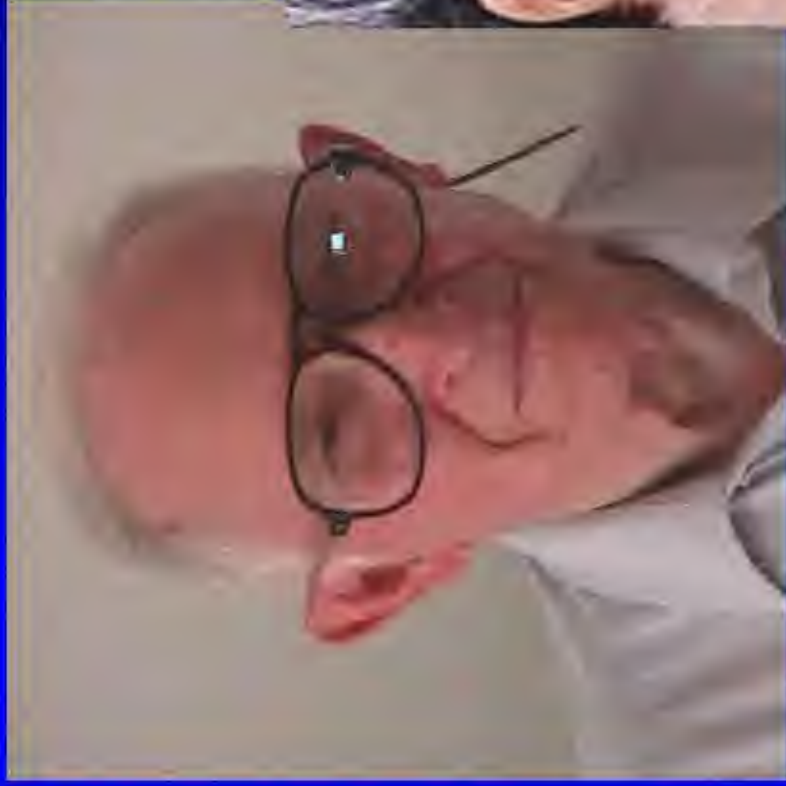
What will it feel like?

A Quality of Life Meter

Your habits,
Your family,
Your goals



Memory Glasses



IDEO

Serendipity

MetroSpark



DiaBetNet



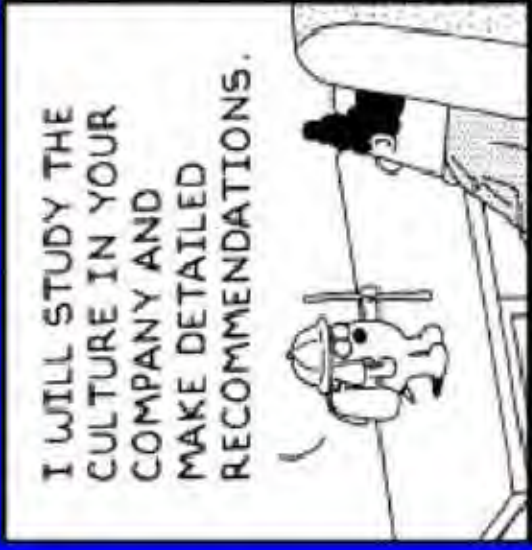


Thank you for listening!

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